



Air Quality Permitting Statement of Basis

March 15, 2005

**Tier II Operating Permit and Permit to Construct
No. T2-040014**

**St. Luke's Regional Medical Center
Boise, Idaho**

Facility ID No. 001-00029

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PROPOSED

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Acronyms, Units, and Chemical Nomenclature

AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
AQCR	Air Quality Control Region
ASTM	American Society for Testing and Materials
Btu	Btu's per gallon
CO	carbon monoxide
DEQ	Department of Environmental Quality
EF	emission factor
Btu	British thermal units
HAPs	hazardous air pollutants
hp	horse power
hp-hr	horse power-hour
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
lb/hr	pound per hour
MACT	Maximum Available Control Technology
MMBtu	million British thermal units
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO _x	oxides of nitrogen
NSPS	New Source Performance Standards
O ₃	ozone
PAH	polyaromatic hydrocarbon
Pb	lead
PM	particulate matter
PM ₁₀	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
PSD	Prevention of Significant Deterioration
PTC	permit to construct
PTE	potential to emit
Rules	Rules for the Control of Air Pollution in Idaho
SLRMC	Saint Luke's Regional Medical Center
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SO ₂	sulfur dioxide
TAPs	toxic air pollutants
T/yr	tons per year
UTM	Universal Transverse Mercator

1. PURPOSE

The purpose for this statement of basis is to satisfy the requirements of IDAPA 58.01.01 Subpart 400 et seq. and 200 et seq., Rules for the Control of Air Pollution in Idaho, for issuing Tier II operating permits and permits to construct.

2. FACILITY DESCRIPTION

Saint Luke's Regional Medical Center (SLRMC) is a general medical and surgical hospital located at 140 E. Jefferson Street in Boise. The existing emissions sources at SLRMC are four dual-fuel boilers, seven diesel-fired emergency generators, three sterilizers, two disposers, three aerators, six diesel storage tanks, three cooling towers, and paved roads in the parking areas.

3. FACILITY / AREA CLASSIFICATION

The SLRMC is not a major facility as defined in IDAPA 58.01.01.205, nor is it a designated facility as defined in IDAPA 58.01.01.006.27. The primary Standard Industrial Classification (SIC) code for the facility is 8062, *General Medical and Surgical Hospitals*. The Aerometric Information Retrieval System (AIRS) facility classification is *synthetic minor* (SM)—potential uncontrolled oxides of nitrogen and sulfur dioxide emissions are greater than 100 tons per year (T/yr), but permitted emissions are less than 100 T/yr. The potential emissions rates for hazardous air pollutants (HAPs) are below 25 T/yr collectively and less than 10 T/yr for any single HAP. The facility is not subject to Prevention of Significant Deterioration (PSD) requirements because its potential to emit is less than all applicable PSD major source thresholds.

The SLRMC is located in the city of Boise, which is located in Northern Ada County. Northern Ada County is located in Air Quality Control Region (AQCR) 64 and Universal Transverse Mercator (UTM) Zone 11. Northern Ada County is a maintenance area for carbon monoxide (CO) and particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM₁₀). Northern Ada County is designated as an attainment or unclassifiable for sulfur dioxide (SO₂), oxides of nitrogen (NO_x), ozone (O₃), and lead (Pb). There are no Class I areas within 10 kilometers of the facility.

The AIRS information for each regulated air pollutant emitted by SLRMC is provided in Section 8 of this document. This information is entered into the U.S. Environmental Protection Agency (EPA) AIRS database.

4. APPLICATION SCOPE

On June 3, 2004, the Department of Environmental Quality (DEQ) received an application from SLRMC, requesting an increase in the boiler's annual natural gas consumption, defined in the facility's existing Tier II operating permit No. 001-00029, issued on April 2, 2002. Also, SLRMC requested increasing the hours of operation for the emergency generators, defined in the facility's existing PTC No. P-030063, issued on March 26, 2004. Because the requested modifications are to modify both the facility's Tier II operating permit and PTC, DEQ is processing the application as a combo Tier II operating permit and permit to construct

4.1 Application Chronology

6/3/04	DEQ received an application from SLRMC to revise the facility's existing Tier II operating permit and PTC.
6/22/04	DEQ determined the application incomplete.
7/26/04	DEQ received a request from SLRMC to review the draft permit.
7/19/04	DEQ received additional information from SLRMC.

7/26/04	DEQ received additional information from SLRMC.
8/16/04	DEQ determined SLRMC's permit application complete.
10/25/04	DEQ received updated Toxic Air Pollutants (TAPs) emissions rates from SLRMC.
11/1/04	DEQ sent an electronic copy of the draft permit to the Boise Regional Office for review.
11/23/04	DEQ sent SLRMC a copy of draft permit No. T2-040014 for review.
2/24/05	DEQ sent SLRMC a copy of draft permit No. T2-040014 for review for the second time.

5. PERMIT ANALYSIS

This section of the statement of basis describes the regulatory requirements for this Tier II operating permit and permit to construct.

5.1 Process Description

General Description

The following section describes the existing boiler and generator operations at the facility, along with some of the requested changes:

- There are four identical Cleaver Brooks boilers at SLRMC—each rated at the same capacity with the same stack parameters. Each boiler may operate using either natural gas fuel or ASTM Grade 2 fuel oil. For this permitting action, SLRMC requested operational flexibility to increase the operating boiler's annual natural gas consumption from the permitted 133 million cubic feet per year (MM ft³/yr) to 256 MM ft³/yr.
- In accordance with the facility's existing Tier II operating permit, issued on April 2, 2002 only one of the four boilers may be operated at a time, when combusting ASTM Grade 2 fuel oil. The boilers can operate on ASTM Grade 2 fuel oil for up to 1,298 hours per year.
- In addition, seven Caterpillar diesel-fired emergency generators, rated at various capacities exist at SLRMC. The generators were permitted by DEQ on April 2, 2002 and on March 26, 2004. The facility requested to increase the short-term operational limit of each generator from the current limit of 45 minutes per day to four hours per day; and the annual limits from 60 hours per year (hr/yr) to 208 hr/yr. This will allow SLRMC the operational flexibility to perform a 4-hour load bank test for any generator periodically throughout the year.
- Combustion product emissions from the boilers and generators (i.e., PM₁₀, CO, NO_x, SO₂, and VOC) are uncontrolled.

5.2 Emissions Estimates

Emissions estimates were provided by SLRMC's consultant (CH2M HILL) and are included in the permit application materials that were submitted to DEQ on 6/3/04, 7/19/04, 10/25/04, and 10/25/04. Appendix A of this statement of basis contains the estimated increase in the boilers' controlled and uncontrolled potential to emit (PTE) emissions for particulate matter (PM), PM₁₀, CO, SO₂, VOC, NO_x, Pb, HAPs, and TAPs. The boilers' emissions estimates for these pollutants were based on emissions factors described in the U.S. EPA's *Compilation of Air Pollution Emission Factors*, AP-42, Fifth Edition, Section 1.4, Natural Gas Combustion (7/98). SLRMC requested to increase the annual natural gas consumption for the four boilers from the previously permitted 133 MM ft³/yr to 256 MM ft³/yr. For

the boilers' emissions estimates, all PM emissions are assumed to be PM₁₀. Emissions from boilers operating on ASTM Grade 2 fuel oil were also estimated, even though the facility did not request to increase the permitted hours of operations (1,298 hrs/yr), which are existing in the Tier II operating permit No. 001-00029, issued April 2, 2002. However, emissions from the boilers operating on ASTM Grade 2 fuel oil are included in the air dispersion modeling.

The emergency generators' controlled and uncontrolled potential to emit (PTE) emissions for PM, PM₁₀, CO, SO₂, VOC, NO_x, Pb, TAPs, and HAPs were estimated by CH2M HILL and are included in the application materials submitted to DEQ on 7/19/04 and 10/25/04. Appendix A of this document contains the increase in the generators' controlled and uncontrolled PTE emissions estimates for PM, PM₁₀, CO, SO₂, VOC, NO_x, Pb, HAPs, and TAPs. The facility requested to modify the generators' PTC No. P-030063, issued on March 26, 2004, by increasing the short-term operation limit from 45 minutes per day to four hours per day. The annual hours of operation limits are also requested to be increased from the previously permitted 60 hours per year to 208 hours per year. This will allow SLRMC operational flexibility during their generator maintenance runs and load bank tests. The generators' emissions estimates for SO₂, HAPs, and TAPs were based on emissions factors described in the U.S. EPA's *Compilation of Air Pollution Emission Factors*, AP-42, Fifth Edition, Section 3.3, Gasoline and Diesel Industrial Engines (1/95) and Section 3.4, Large Stationary Diesel and All Stationary Dual-Fuel Engines (10/96). The emissions estimates for PM, PM₁₀, CO, VOC, and NO_x were based on emissions data supplied by the distributor, Western States Equipment. For the generators emissions estimates, all PM emissions are assumed to be PM₁₀.

The estimated emissions increases for the criteria air pollutants from the boilers and the generators are summarized in Table 5.1. The controlled emissions estimates presented in Table 5.1 provided the basis of the analysis for PM₁₀, CO, NO_x, and SO₂ compliance with the National Ambient Air Quality Standards (NAAQS) – see the modeling results in Appendix B of this document.

Table 5.1 CONTROLLED EMISSIONS RATES INCREASE FROM THE BOILERS AND GENERATORS

Source Description	PM ^a		PM ₁₀ ^b		CO ^c		NO _x ^d		SO ₂ ^e		VOC ^f		Pb ^g	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Four boiler stacks	0.88	0.48	0.88	0.48	9.64	5.16	11.48	6.16	0.08	0.04	0.64	0.32	0.00	0.00
Seven emergency ^h generators stacks	5.15	0.38	5.15	0.383	29.03	2.15	212.3	15.70	32.01	2.36	4.20	0.32	0.00	0.00
Total	6.03	0.86	6.03	0.86	38.67	7.31	223.8	21.86	32.09	2.40	4.84	0.64	0.00	0.00

^a Particulate matter

^b Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers

^c Carbon monoxide

^d Nitrogen oxides

^e Sulfur dioxide

^f Volatile organic compound

^g Lead

^h Data taken from Tier II OP/PTC application

It should be noted that, as shown in Table 5.1, the total increase in any criteria air pollutants emissions that resulted from the modifications of the boilers and the generators did not trigger the major source threshold limits of 100 T/yr. Thus, emissions from SLRMC are below the permitting requirements that are mandated under the Title V permitting program.

Also for Title V purposes, the PTE for any single HAP is estimated to be less than 10 T/yr, the major source threshold of any HAP. The PTE for a combination of two HAPs or more from the facility are below the major source threshold of 25 T/yr—see Appendix A of this document.

Emissions estimates based on the total natural gas fuel consumption of 256 million cubic feet per year from all boilers were also estimated. Additionally, emissions from boilers when operating using ASTM Grade 2 fuel oil were estimated and included in the modeling. These emissions calculations provided the basis for the emissions limits for PM₁₀, CO, NO_x, and SO₂ in the permit and for the compliance with the NAAQS—see Appendix B of this document.

Detailed emissions estimates are included in Appendix A of this statement of basis. It should be noted that the permitted emissions limits contained in the permit were used to determine the processing fee assessed in accordance with IDAPA 58.01.01.407.

5.3 Modeling

Appendix B of this statement of basis contains the modeling review memorandum, which includes a discussion of the modeling analysis conducted for this project. DEQ determined that SLRMC has successfully demonstrated that the operations at the facility will not cause or significantly contribute to a violation of any NAAQS. Also, the modeled toxic air pollutants showed the facility will not exceed any TAP increments.

5.4 Regulatory Review

This section describes the regulatory analysis of the applicable air quality rules with respect to this permit.

IDAPA 58.01.01.401.....Tier II Operating Permit

This permitting action is a modification of Tier II Operating Permit No.001-00029, issued April 2, 2002. In addition, this permitting action is to modify the PTC No.P-030063, issued March 26, 2004. In accordance with Tier II operating permit General Conditions, modifications are subject to DEQ review in accordance with IDAPA 58.01.01.200 et seq. The proposed modification will comply with all applicable emissions standards and will not cause or contribute to violation of any applicable air quality standard as required by IDAPA 58.01.01.203.01, 02 and 03 and IDAPA 58.01.01.403.02.

IDAPA 58.01.01.404.01.c.....Opportunity for Public Comment

This Tier II operating permit is subject to the provisions of IDAPA 58.01.01.404.01.c, and a 30-day public comment period will be provided by DEQ.

IDAPA 58.01.01.406.....Obligation to Comply

Receipt of this Tier II permit does not relieve SLRMC from the responsibility to comply with all federal, state, and local rules and regulations.

IDAPA 58.01.01.407.....Permit Processing Fees for Tier II Permits

This project is subject to the fee provisions of IDAPA 58.01.01.407.01, and SLRMC was assessed a processing fee of \$5,000.00 for a permitted emissions for PM₁₀, CO, NO_x, and SO₂ of 38.04 T/yr.

IDAPA 58.01.01.577.....Ambient Air Quality Standards for Specific Air Pollutants

SLRMC submitted a modeling analysis, demonstrating that emissions rates from the facility will not cause or significantly contribute to a NAAQS violation; therefore, the requirements of IDAPA 58.01.01.403.02 and IDAPA 58.01.01.577 are satisfied.

Also, the TAPs emissions from the facility were demonstrated to meet the requirements specified in IDAPA 58.01.01.585-586 and as required in IDAPA 58.01.01.210.

IDAPA 58.01.01.625.....Visible Emission Limitation

Emissions from all stationary point sources in the state of Idaho are required to comply with the opacity standards of IDAPA 58.01.01.625-626, unless exempted under Section 625.01. Sources at the facility are subject to this standard.

40 CFR 60.....New Source Performance Standards

Currently, boilers Nos. 3 and 4 are subject to the terms and provisions of New Source Performance Standard (NSPS), Subpart Dc. After modification, boilers Nos. 1 and 2 will be subject to NSPS rules.

40 CFR 61 and 63.....National Emission Standards for Hazardous Air Pollutants and Maximum Achievable Control Technology

The facility is not currently subject to any National Emission Standard for Hazardous Air Pollutants or Maximum Achievable Control Technology requirements at this time.

40 CFR 52.....Prevention of Significant Deterioration

This permit does not include any Prevention of Significant Deterioration (PSD) issues.

6. PERMIT CONDITIONS

This section lists only those permit conditions that have changed or have been deleted as a result of this permit modification. All other permit conditions remain unchanged. Permit conditions related to the modified permit are identified as Modified Permit Conditions. Permit conditions related to the existing permit are identified as Existing Permit Conditions.

- 6.1 Existing Permit Condition 3.3 limits PM, PM₁₀, and NO_x emissions rates from each boiler stack to 0.4 lb/hr, 0.4 lb/hr, and 4.10 lb/hr, respectively. Also, it limits the aggregated boilers NO_x emissions to 9.29 T/yr. This existing permit condition was deleted in the modified permit. The modified permit limits the natural gas consumption for boilers operating at the facility to 256 MM ft³/yr. Emissions rates for all criteria air pollutants resulted from the fuel consumption showed compliance with NAAQS. Therefore, this existing permit condition was deemed unnecessary and was deleted from the modified permit.
- 6.2 Existing Permit Condition 3.5 limits the total maximum natural gas consumption of the boilers to 133 million standard cubic feet in any 12-month period.
- 6.3 Modified Permit Condition 3.6 limits the maximum amount of natural gas combusted in the boilers to 256 million standard cubic feet per any consecutive 12-month period.
- 6.4 Existing Permit Condition 3.9 limits the daily operating hours when boilers combusting ASTM Grade 2 fuel oil to the following equation:

$$\text{Hours/day} = 5.08/S$$

Where S indicates that the weight percent of sulfur in the oil (e.g., if the fuel is 0.5% sulfur, then S = 0.5).

- 6.5 Modified Permit Condition 3.8 limits the operation of each boiler on ASTM Grade 2 fuel oil to a maximum of 10 hours in any 24-hour period. A 10 hours operating limits for each boiler while combusting ASTM Grade 2 fuel oil was necessary in order to comply with the NAAQS for the SO₂ 24-hour averaging period – refer to the modeling memo.
- 6.6 Existing Permit Condition 3.12 required the permittee to meet the requirements of 40 CFR 60.48c(g) for boilers Nos. 3 and 4.

- 6.7 Revised Permit Condition 3.12 requires the permittee to meet the requirements of 40 CFR 60.48c(g) for boilers Nos. 1, 2, 3, and 4. After modification boilers Nos. 1 and 2 became subject to NSPS, Subpart Dc rules.

Permit Condition 3.12 is included in the permit to determine compliance with the amount of natural gas consumed in the boilers, as required in 40 CFR 60.48c(g)

It should be noted that SLRMC sent a letter to EPA Region 10 on December 22, 2004 in which they requested from EPA when more than one boiler is firing natural gas simultaneously, a single natural gas flow meter may be used that measures the total natural gas consumption for the boilers. Then SLRMC will divide each boiler design heat input capacity by the total of the design heat input capacities of each boiler, and will use this quantity to prorate the natural gas consumption on each boiler on a monthly basis. EPA has approved a similar situation like this in a different jurisdiction (i.e., state of Alaska). However, SLRMC has yet to get the approval from U.S. EPA Region 10. For this reason Permit Condition 3.12 included this statement “unless EPA specifies a different time period for recordkeeping, the permittee.” If EPA approves the use of a single natural gas flow meter for the boilers, the permittee can monitor the total gas consumption from the boilers and they will not be required to modify the permit until the expiration date of the permit.

- 6.8 Revised Permit Condition 3.13 (2nd bullet) was added to include the NSPS reporting requirements for boilers Nos. 1 and 2.

It should be noted that boilers Nos. 3 and 4 are subject to NSPS requirements of 40 CFR 60, Subpart Dc. A semi-annual calendar report is required by 40 CFR 60.48c for the sulfur content in the ASTM Grade 2 fuel oil. However, in this permit, SLRMC is required to report the sulfur content in ASTM Grade 2 fuel oil in an annual calendar basis, per the October 7, 1993 letter from EPA Region 10 to SLRMC, in which it was approved that SLRMC to report the sulfur content in ASTM Grade 2 fuel oil annually for boilers Nos. 3 and 4.

However, for boilers Nos. 1 and 2, the reporting will be semi-annual, as required in 40 CFR 60.48c, unless EPA specifies a different reporting period. Nevertheless, on October 12, 2004, SLRMC sent EPA Region 10 a letter requesting to change the reporting to annually for boilers Nos. 1 and 2.

- 6.9 Existing Permit Condition 2.7 (PTC No. P-030063, issued March 26, 04) limits the hours of operation for each emergency generator to 45 minutes in any 24-hour period and to 60 hours per any consecutive 12-month period.
- 6.10 Modified Permit Condition 4.5 limits the hours of operation for each emergency generator to four hours in any 24-hour period and to 208 hours per any consecutive 12-month period.

7. PUBLIC COMMENT

In accordance with IDAPA 58.01.01.404.01.c, DEQ has determined that the proposed permit should be made available for a public comment period. Consequently, the application materials, proposed Tier II operating permit and permit to construct, and DEQ’s statement of basis will be made available for 30-day public comment period.

8. AIRS INFORMATION

Table 8.1 AIRS/AFS^a FACILITY-WIDE CLASSIFICATION^b DATA ENTRY FORM

AIR PROGRAM	SIP	PSD	NSPS (Part 60)	NESHAP (Part 61)	MACT (Part 63)	TITLE V	AREA CLASSIFICATION A – Attainment U – Unclassifiable N – Nonattainment
POLLUTANT							
SO ₂	SM						U
NO _x	SM						U
CO	B						U
PM ₁₀	B						U
PT (Particulate)	B						U
VOC	B						U
THAP (Total HAPs)	B						U
			APPLICABLE SUBPART				
			Dc				

^a Aerometric Information Retrieval System (AIRS) Facility Subsystem (AFS)

^b AIRS/AFS Classification Codes:

- A = Actual or potential emissions of a pollutant are above the applicable major source threshold. For NESHAP only, class “A” is applied to each pollutant which is below the 10 ton-per-year (T/yr) threshold, but which contributes to a plant total in excess of 25 T/yr of all NESHAP pollutants.
- SM = Potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable regulations or limitations.
- B = Actual and potential emissions below all applicable major source thresholds.
- C = Class is unknown.
- ND = Major source thresholds are not defined (e.g., radionuclides).

9. FEES

In accordance with IDAPA 58.01.01.407.01, a processing fee of \$5,000.00 is required because the permitted emissions are of 10 to less than 100 T/yr.

SLRMC is not a major facility as defined in IDAPA 58.01.01.008.10. Therefore, registration fees are not applicable in accordance with IDAPA 58.01.01.387.

Table 9.1 Tier II Processing Fee Summary

Emissions Inventory	
Pollutant	Permitted Emissions
PM ₁₀	1.24
CO	11.54
NO _x	15.54
SO ₂	9.72
Total:	38.04
Tier II Fee	\$5,000.00
Fees paid to date	\$0.00
Fee Due	\$5,000.00

10. RECOMMENDATION

Based on the review of the application materials and all applicable state and federal regulations, staff recommends that DEQ issue a proposed Tier II operating permit and permit to construct No. T2-040014 to public comment in accordance with IDAPA 58.01.01.404.

HE/sd

Project No. T2-040014

APPENDIX A

**St. Luke's Regional Medical Center, Boise
T2-040014**

Emission Estimates

APPENDIX B

**St. Luke's Regional Medical Center, Boise
T2-040014**

Modeling Analysis